

## **CLAIMS**

What is claimed is

- 1        1.        A method for making measurements during drilling of a borehole, the method  
2                comprising:  
3                (a)        making measurements continuously with a formation evaluation (FE)  
4                        sensor on a bottom hole assembly (BHA) over a time period that includes  
5                        during said drilling of said borehole;  
6                (b)        concurrently making quality control (QC) measurements while said FE  
7                        measurements are being made, said QC measurements including at least  
8                        one measurement not related to motion of said BHA;  
9                (c)        storing samples of said FE measurements in a working memory of a  
10                       processor on said BHA;  
11                (d)        analyzing said QC measurements; and  
12                (e)        based on said analysis, storing selected samples of said FE measurements  
13                       in a permanent memory of said processor.  
14  
- 1        2.        The method of claim 1 wherein said FE sensor comprises at least one hydrophone  
2                responsive to a seismic signal from a surface source.  
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- 1        3.        The method of claim 1 wherein said FE sensor comprises at least one geophone  
2                on a non-rotating sleeve of said BHA, said at least one geophone responsive to a  
3                seismic signal from a surface source.

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- 1 4. The method of claim 1 wherein said at least one measurement is selected from (i)  
2 a weight on bit (WOB), (ii) flow rate of a fluid in said borehole, (iii) a level of a  
3 tube wave in said borehole, (iv) a level of motion of a non-rotating sleeve on said  
4 BHA, and (v) a measurement made by a near bit accelerometer.  
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- 1 5. The method of claim 1 wherein said QC measurements further comprise a  
2 measurement of motion of said BHA.  
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- 1 6. The method of claim 1 wherein said FE sensor comprises an accelerometer  
2 responsive to a signal from a surface source.  
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- 1 7. The method of claim 1 wherein said FE sensor comprises an acoustic sensor  
2 responsive to a signal from a source in another borehole.  
3
- 1 8. A method for making measurements during drilling of a borehole, the method  
2 comprising:-  
3 (a) making quality control (QC) measurements using a sensor on a bottom  
4 hole assembly BHA during drilling of said borehole, said QC  
5 measurements including at least one measurement not related to a motion  
6 of said BHA;  
7 (b) analyzing said QC measurements;

- 8 (c) predicting an initial time when measurements made by a formation  
9 evaluation (FE) sensor on said BHA are expected to be of acceptable  
10 quality; and  
11 (d) making measurements with said FE sensor over a time interval that starts  
12 earlier than said initial time.

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1 9. The method of claim 1 wherein said FE sensor comprises an acoustic sensor  
2 responsive to a signal from a source at at least one of (i) a surface location, and,  
3 (ii) in another borehole.

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1 10. The method of claim 1 wherein said acoustic sensor is one of (i) a hydrophone,  
2 (ii) a geophone, and, (iii) an accelerometer.

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1 11. The method of claim 8 wherein said predicting is based at least in part on  
2 measurements made by an axial accelerometer on the BHA.

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1 12. The method of claim 8 wherein said predicting is based at least in part on  
2 monitoring of a mud flow in said borehole.